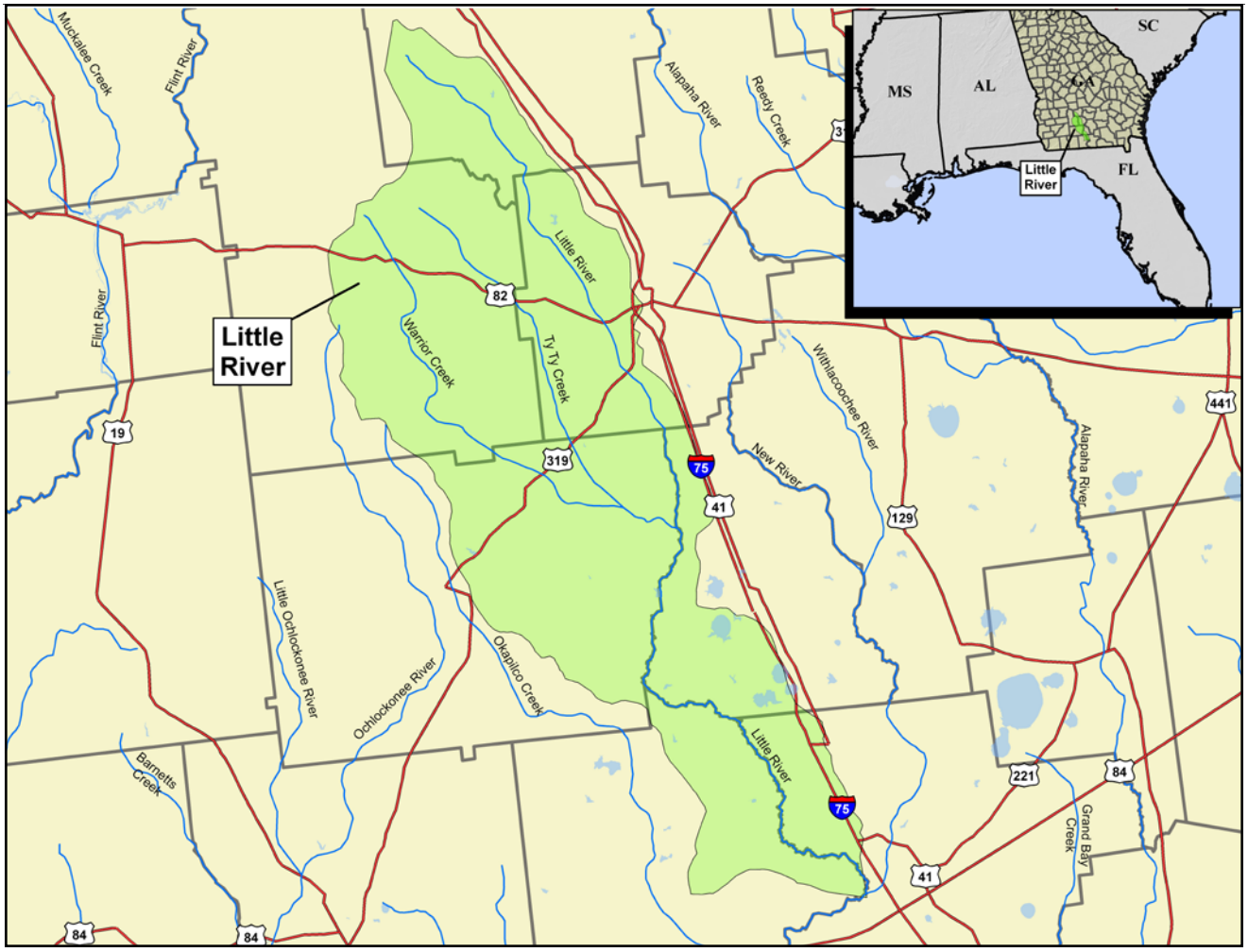
United States Department of Agriculture

Conservation Effects Assessment Project (CEAP)

Watershed Fact Sheet

Little River Watershed, Georgia: 2005-2008

A CSREES* Competitive Grant Watershed, one of 37 CEAP watershed projects.



CEAP Assessment

CEAP Assessment

The water quality and hydrology have been studied for the past three decades. This project extends and uses this data record along with expert knowledge of the biophysical and socioeconomic factors affecting farm practices in a Cumulative Effects Analysis framework to determine the effects of conservation practices on watershed water quality.

Watershed Description

- 82,500 acres (334 km^2)
- 40% forest, 36% cropland, 18% pasture

**Cooperative State Research, Education, and Extension Service*

- Major crops 1995-2004: cotton (60% of cropland) and peanuts (38%).
- Major crops 1974-1985: corn, soybeans, peanuts, sorghum, and tobacco.
- Riparian forest buffers are the predominant conservation practice.
- No point sources of pollution.
- One of six regional experimental watersheds established by the USDA-ARS as part of a national watershed hydrology research program starting in the 1950's.
- Hydrologic records since 1971; water quality records since 1974.

Collection of digital elevation data using a Trimble RTK GPS receiver mounted on a tractor. Data will be used to build terrain data for modeling.

Horizontal, broad-crested V-notch weirs and data loggers which record stage are used to measure flow. ISCO samplers at the far end of the bridge collect water samples for nutrient and pesticide analyses. The vertical PVC pipe half-way down the bridge holds a sensor which logs dissolved oxygen data continuously.

Issues:

- Segments of the main reach of the Little River are on the 2002 303(d) water quality impairments list for low dissolved oxygen (DO) attributed to nutrient enrichment from nonpoint source pollution.
- Tributaries of the Little River are listed for low DO, fecal coliform, and sediment.
- Georgia does not currently have nutrient water quality standards for rivers and streams.

Approach

Water Sampling

- Weekly flow-proportional water-sample composites are analyzed for nitrogen, phosphorus, and suspended solids. DO, chlorophyll *a*, turbidity, and pH are measured weekly with a water quality sonde. Biweekly grab samples are analyzed for fecal coliform.
- Horizontal, broad-crested weirs with V-notch center sections at eight locations on Little River and its tributaries. Stages are measured and stage-discharge relationships are used to calculate flows at 5 minute intervals. Stream and climate data are available one day after data collection at http://www.tifton.uga.edu/sewrl/radio/lrdata.htm.

Watershed Models

- We will use the Cumulative Effects Analysis approach to develop a conceptual model that will be implemented using a decision analysis tool such as InfoHarvest or STELLA.
- The Soil Water Assessment Tool (SWAT) will be used to model the nested watersheds.
- The Riparian Ecosystem Management Model (REMM) will be used to estimate riparian and filter strip attenuation factors.

Assess Practices: The conceptual model will be applied to clarify trend analyses, regression analyses, and simulation modeling. SWAT will be used to model the nested watersheds for actual and alternative conservation practice scenarios.

Communicating Results

Three annual reports, scientific meetings, stakeholder meetings, technical and non-technical publications.

Collaborators

- University of Georgia Cooperative Extension
- USDA-ARS Southeast Watershed Research Laboratory
- South Georgia Regional Development Center
- USDA-NRCS
- USDA-FSA
- Georgia Soil & Water Conservation Commission
- Middle South Georgia Soil and Water Conservation District
- US EPA Region IV
- Local farmers and landowners; local government

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http://www.nrcs.usda.gov/technical/nri/ceap/